

## DETAILS OF WEATHER OF THE MONTH IN THE UNITED STATES.

## CYCLONES AND ANTICYCLONES.

There were more than the usual number of low and of high pressure areas during the month, but with minor exceptions these were of the usual summer intensity and did not call for the issue of storm warnings. During the month as shown by Chart III 11 primary low pressure areas were observed over the United States and southern Canada, and of these seven were of the Alberta type and these either passed eastward along the northern border and left the field of observation in the vicinity of the Gulf of St. Lawrence or else turned northward into Canada; two belonged to the South Pacific type and one to the Northern Rocky Mountain type and these passed east-northeastward across the Great Lakes into southern Canada; one was of the East Gulf type and it passed inland immediately east of Pensacola on the 4th and dissipated over Tennessee on the 5th. There were five secondary low-pressure area developments, one of these occurring over the middle Mississippi Valley on the 4th; three formed over the middle Atlantic States, one on the 6th, another on the 7th, and yet another on the 10th; and one formed over the Missouri Valley on the 30th. The number of lows exceeded the average number, 8.6, for the month of July.—*E. H. Bowie.*

The outstanding feature of the weather on the Pacific

coast during the month of July was the persistence with which depressions formed over the plateau region. These depressions would form over the valley of the Colorado and the plateau of southern Nevada, slowly increase in energy and extend northward until they covered the entire plateau region, remaining in that section for a few days, and then, in most cases, would unite with a depression moving southeastward through British Columbia and Alberta and pass east, only to be followed within a few days by a recurrence of a similar depression. Several high areas appeared on the northern coast, but only on one or two occasions did they move inland, and then only with greatly diminished energy.—*G. H. Willson.*

Eleven high-pressure areas were charted (see Chart III), and of these five belonged to the Alberta type, three to the North Pacific type and three to the Northern Rocky Mountain type. All of these highs except two moved eastward north of latitude 35° N. The two exceptions passed southward from the northern Rocky Mountain region and disappeared over Texas. The highs of the month were not abnormal in any respect, but in number exceeded the average number for July for 21 years.—*E. H. Bowie.*

## THE WEATHER ELEMENTS.

By P. C. DAY, Climatologist and Chief of Division.

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## PRESSURE AND WINDS.

The distribution of the mean atmospheric pressure over the United States and Canada, and the prevailing direction of the winds for July, 1919, are graphically shown on Chart VII, while the means at the several stations, with the departures from the normal, are shown on Tables I and III.

At the beginning of the month a strong high-pressure area that had moved from the Lake region during the closing days of June still persisted over the eastern third of the country. West of the Mississippi River pressure was somewhat lower, particularly in the Central Mountain and Plateau States, but without a distinctive storm center.

By the middle of the first decade the eastern HIGH had disappeared, and pressure remained low over practically all other districts. During the latter part of the decade high pressure again developed over the Great Lakes and moved eastward to New England, and there was a general rise in pressure over most parts of the country, although at the close sharp falls had occurred in the northeastern districts and pressure was falling in the South and far West.

During the second decade pressure was comparatively high off the Atlantic coast, and with more or less constancy this condition persisted during the greater part of the month, but no important anticyclones moved into or developed over the interior portion of the country during the last two decades, and the changes in pressure from day to day were mainly small.

The month as a whole was distinctly free from well-developed low areas, no single storm center of material importance extending over a wide area. The small

tropical storm that approached western Florida from the Gulf on the morning of the 4th quickly dissipated on reaching the coast. (See page 500 and Chart XI.)

The pressure for the month showed no marked departure from the normal, the averages being uniformly slightly above normal from the Mississippi Valley eastward, and over the Southwest, and slightly below normal from the Missouri Valley westward, except over a small area in the far Northwest and the adjacent portions of British Columbia, where there was a small excess.

In the absence of any marked displacement of the pressure distribution usual to a midsummer month, the winds assumed the normal southerly course prevalent during the warmest periods of the year over nearly all districts from the Rocky Mountains eastward. In the mountain districts of the West variable winds, dependent mostly on the topography, prevailed, while along the Pacific coast the winds were, as usual, from the ocean toward the land, but they had a very general trend from the northwest.

## TEMPERATURE.

The beginning of the month was marked by decidedly cool weather over most eastern districts, particularly along the south Atlantic coast, where, on the morning of the 1st, the lowest temperatures for the month were reported, and in a few localities the temperatures were the lowest ever observed in July. Likewise, in the far West temperatures were low for the season, but throughout the interior and northern portions of the country the weather was generally warm, and at a few points in the Great Lakes region the highest temperatures for the month were reported during the first few days.